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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/667,803

09/22/2003

Xiaohua Huang

2152

7590

12/06/2005

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EXAMINER

KIM, HONG CHONG

ART UNIT

PAPER NUMBER

2185

DATE MAILED: 12/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/667,803

Applicant(s)

HUANG, XIAOHUA

Examiner

Hong C. Kim

Art Unit

2185

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 September 2003.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-12 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 23 April 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

*ldh*

**Detailed Action**

1. Claims 1-12 are presented for examination. This office action is in response to the application filed on 9/23/2003.

***Information Disclosure Statement***

2. Applicants are reminded of the duty to disclose information under 37 CFR 1.56.

The examiner requests, in response to this Office action, any reference(s) known to qualify as prior art under 35 U.S.C. sections 102 or 103 with respect to the invention as defined by the independent and dependent claims. That is, any prior art (including any products for sale) similar to the claimed invention that could reasonably be used in a 102 or 103 rejection. This request does not require applicant to perform a search. This request is not intended to interfere with or go beyond that required under 37 C.F.R. 1.56 or 1.105.

The request may be fulfilled by asking the attorney(s) of record handling prosecution and the inventor(s)/assignee for references qualifying as prior art. A simple statement that the query has been made and no prior art found is sufficient to fulfill the request. Otherwise, the fee and certification requirements of 37 CFR section 1.97 are waived for those documents submitted in reply to this request. This waiver extends only to those documents within the scope of this request that are included in the application's first complete communication responding to this requirement. Any supplemental replies subsequent to the first communication responding to this request and any information

disclosures beyond the scope of this are subject to the fee and certification requirements of 37 CFR section 1.97.

In the event prior art documentation is submitted, a discussion of relevant passages, figs. etc. with respect to the claims is requested. The examiner is looking for specific references to 102/103 prior art that identify independent and dependent claim limitations. Since applicant is most knowledgeable of the present invention and submitted art, his/her discussion of the reference(s) with respect to the instant claims is essential. **A response to this inquiry is greatly appreciated.**

**The examiner also requests**, in response to this Office action, support be shown for language added to any original claims on amendment and any new claims. That is, indicate support for newly added claim language by specifically pointing to page(s) and line number(s), in the specification and/or drawing figure(s). This will assist the examiner in prosecuting the application.

### ***Drawings***

3. The drawings are objected to under 37 C.F.R. § 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “a multi-level address decoding circuits” “a multi-level muxing of input data” “a multilevel priority encoding circuit” “a data bus circuits” and “a pipe line structure” must be shown or the feature cancelled from the claim. No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended

replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

4. The status of the related U.S. applications must be updated accordingly (e.g., U.S. Patent Application Serial No. ####,### filled Sept. 07, 1990, now abandoned; ..., now U.S. Patent #,###,### issued Jan. 01, 1994; or This application is a continuation of Serial Number ####,###, filed on December 01, 1990, now abandoned; ...etc.) in the Related Applications section and in any other corresponding area in the specification, if any.
5. The title of the invention is not descriptive. A new title is required that is clearly

indicative of the invention to which the claims are directed. The title should be more specific to differentiate the invention from similar inventions in the patent literature.

"sub-blocks" "a multi-level address decoding circuits" "a multi-level muxing of input data" "a multilevel priority encoding circuit" "a data bus circuits" and "a pipe line structure" aspects of the invention should be mentioned in the title so that the title is more descriptive.

6. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

It appears that "Inventions" should be changed to "apparatus" or "system".

### ***Claim Objections***

7. Claims 1-12 are objected to because of the following informalities:

As to claim 1 in line 3, "plurity" should be changed to "plurality" for clarity.

As to claim 4 in line 2, it is unclear what is referring to "the bus circuits of address and Data to write or match".

As to claim 5 in line 2, "the chip" is insufficient antecedent basis for this limitation in the claim.

As to claim 7 in line 2, it is unclear what is referring to "the bus circuits of address and Data to write or match". Also it is unclear what is referring to "the particular column".

As to claim 8 in line 2, it is unclear what is referring to "address and Data to write or match". In line 3, it is unclear what is referring to "the particular sub-block".

As to claim 10 in line 2, "inter face" should be changed to –interface" for clarity. Appropriate correction/clarification is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 7 and 8 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. It appears that added limitations of "second level decoding" and "third level decoding" was not described in the specification at the time the application was filed.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1-12 are rejected under 35 U.S.C. 102(e) as being anticipated by McKenzie, et al. (McKenzie) US Patent No. 6,775,166.

As to claim 1, McKenzie discloses the invention as claimed. McKenzie discloses a content addressable memory (CAM) unit or Ternary content addressable memory (TCAM) (Fig. 6a), comprising: a plurality of identical same size sub-block CAM or TCAM (Fig. 2B); a multi-level address decoding circuits (Fig. 6a Refs SL and BL drivers, row decoders, and wordline drivers) for data read and write; a multi-level muxing of input data (Fig. 6a Refs 312, SL and BL drivers, row decoders, and wordline drivers); a multilevel priority encoding circuit (Fig. 2B) of match address among the sub-block; a data bus circuits (Fig. 6a Refs. 312) to distribute the input data to every sub-block; and a pipe line structure (Fig. 9).

As to claim 2, McKenzie discloses the invention as claimed the above.

McKenzie further discloses wherein the sub-block has its own address decoding and priority encoding function (Fig. 6a Refs SL and BL drivers, row decoders, and wordline drivers).



As to claim 3, McKenzie discloses the invention as claimed the above.

McKenzie further discloses wherein the sub-block are equally placed in four quadruples as a matrix with number of column and rows (Fig. 6a).

As to claim 4, McKenzie discloses the invention as claimed the above. McKenzie further discloses wherein the bus circuits of address and Data to write or match are routed to the midpoint at each side (Fig. 6a Ref. 312).

As to claim 5 McKenzie discloses the invention as claimed the above. McKenzie further discloses wherein address and Data to write or match are sent to the center of the chip or CAM unit (Fig. 6a Ref. 312).

As to claim 6 McKenzie discloses the invention as claimed the above. McKenzie further discloses wherein address and Data to write or match are sent to the right side or left side based on the first level decoding (Fig. 6a Refs SL and BL drivers, row decoders, and wordline drivers).

As to claim 7, McKenzie discloses the invention as claimed the above. McKenzie further discloses wherein address and Data to write or match are sent to the particular column based on the second level decoding (Fig. 6a Refs SL and BL drivers, row decoders, and wordline drivers).

As to claim 8 , McKenzie discloses the invention as claimed the above.

McKenzie further discloses wherein address and Data to write or match are sent to the particular sub-block based on the third level decoding (Fig. 6a Refs SL and BL drivers, row decoders, and wordline drivers).

As to claim 9 , McKenzie discloses the invention as claimed the above.

McKenzie further discloses wherein each sub-block is identical (Fig. 6a Refs. 300).

As to claim 10, McKenzie discloses the invention as claimed the above.

McKenzie further discloses wherein each sub-block has the same logic interface (Fig. 6a Refs 304s, SL and BL drivers, row decoders, and wordline drivers).

As to claim 11, McKenzie discloses the invention as claimed the above.

McKenzie further discloses wherein the priority encoding is performed among the sub-blocks in same column (Fig. 2B).

As to claim 12, McKenzie discloses the invention as claimed the above.

McKenzie further discloses wherein the priority encoding is performed among the different column in the same quadruple (Fig. 2B).

### ***Conclusion***

1. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See attached PTO-892.
2. A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) days from the mail date of this letter. Failure to respond within the period for response will result in **ABANDONMENT** of the application (see 35 USC 133, MPEP 710.02, 710.02(b)).
3. When responding to the office action, Applicant is advised to clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. He or she must also show how the amendments avoid such references or objections. See 37 C.F.R. ' 1.111(c).
4. When responding to the office action, Applicants are advised to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist examiner to locate the appropriate paragraphs.
5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hong Kim whose telephone number is (571) 272-4181. The examiner can normally be reached on M-F 9:00 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matt Kim can be reached on (571) 272-4182. Any inquiry of a general

Art Unit: 2185

nature or relating to the status of this application should be directed to the TC 2100 whose telephone number is (571) 272-2100.

6. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

7. **Any response to this action should be mailed to:**

Commissioner of Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**or faxed to TC-2100:**  
(571)-273-8300

Hand-delivered responses should be brought to the Customer Service Window (Randolph Building, 401 Dulany Street, Alexandria, VA 22314).

H Kim  
Primary Patent Examiner  
November 30, 2005

